

## Claims

1. A fine-tuning assembly for an optical grating provided in an optical fiber, said assembly comprising:

5           a hollow structure for mounting the optical fiber under tension therethrough along a longitudinal direction;

          a sliding member slideable within said hollow structure along said longitudinal direction, said sliding member having a slanted passage extending therethrough at an angle with a transversal direction, the sliding member and  
10       hollow structure respectively having a first and a second anchor point for affixing the optical fiber thereto with the optical grating extending between said first and second anchor points;

          a wedge member slideable within said slanted passage without interfering with said optical fiber; and

15       transversal displacement means for transversally displacing said wedge member, thereby longitudinally sliding the sliding member within the hollow structure for finely adjusting the tension in the optical fiber and fine-tuning the optical grating.

20       2. The fine-tuning assembly according to claim 1, wherein the first anchor point is adapted to receive an extremity of the optical fiber.

3. The fine-tuning assembly according to claim 2, wherein said transversal displacement means comprise:

25       a screw;

          a screw hole provided in the hollow structure for mounting the screw therethrough rotatably about the transversal direction while preventing movement of said screw in the longitudinal and transversal directions; and

          a transversal threaded cavity provided in the wedge member for threadedly  
30       receiving said screw.

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4. The fine-tuning assembly according to claim 2, wherein said transversal displacement means comprise:

first and second screws;

opposed first and second screw holes provided in the hollow structure transversally allowing the respective first and second screws therethrough while preventing movement of said first and second screws in the longitudinal direction; and

opposed first and second transversal threaded cavities provided in the wedge member for respectively and threadedly receiving said first and second screws.

5. The fine-tuning assembly according to claim 1, wherein said sliding member has a longitudinal bore for allowing the optical fiber therethrough.

6. The fine-tuning assembly according to claim 5, wherein said transversal displacement means comprise:

a screw;

a screw hole provided in the hollow structure for mounting the screw therethrough rotatably about the transversal direction while preventing movement of said screw in the longitudinal and transversal directions; and

a transversal threaded cavity provided in the wedge member for threadedly receiving said screw.

7. The fine-tuning assembly according to claim 5, wherein the wedge member has a hollow portion therein for allowing the optical fiber therethrough.

8. The fine-tuning assembly according to claim 7, wherein said transversal displacement means comprise:

first and second screws;

opposed first and second screw holes provided in the hollow structure transversally allowing the respective first and second screws therethrough while

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opposed first and second transversal threaded cavities provided in the wedge member for respectively and threadedly receiving said first and second screws.

10. The fine-tuning assembly according to claim 1, further comprising bonding means for bonding the optical fiber to the sliding member and hollow structure at said first and second anchor points.

12. A fine-tunable optical grating assembly, comprising:

an optical fiber having an optical grating therein and longitudinally mounted under tension in the hollow structure;

a wedge member slideable within said slanted passage without interfering with said optical fiber; and

transversal displacement means for transversally displacing said wedge member, thereby longitudinally sliding the sliding member within the hollow

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structure for finely adjusting the tension in the optical fiber and fine-tuning the optical grating.

13. The fine-tunable optical grating assembly according to claim 12, wherein an  
5 extremity of the optical fiber is affixed to the first anchor point.

14. The fine-tunable optical grating assembly according to claim 13, wherein said transversal displacement means comprise:

a screw;

10 a screw hole provided in the hollow structure, the screw extending therethrough and being rotatable about the transversal direction,, said screw hole preventing movement of said screw in the longitudinal and transversal directions; and

a transversal threaded cavity provided in the wedge member threadedly  
15 receiving said screw.

15. The fine-tuning assembly according to claim 13, wherein said transversal displacement means comprise:

first and second screws;

20 opposed first and second screw holes provided in the hollow structure transversally receiving the respective first and second screws therethrough while preventing movement of said first and second screws in the longitudinal direction; and

25 opposed first and second transversal threaded cavities provided in the wedge member respectively and threadedly receiving said first and second screws.

16. The fine-tuning assembly according to claim 12, wherein said sliding member has a longitudinal bore allowing the optical fiber therethrough.

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a screw;

a screw hole provided in the hollow structure transversally, the screw

5 extending therethrough and being rotatable about the transversal direction said screw hole preventing movement of said screw in the longitudinal and transversal directions; and

a transversal threaded cavity provided in the wedge member threadedly receiving said screw.

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opposed first and second transversal threaded cavities provided in the wedge member respectively and threadably receiving said first and second screws.

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22. The fine-tuning assembly according to claim 21, wherein said bonding means include an epoxy glue.

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